Attorney Docket No. 12078US01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:

Julstrom et al.

Serial No.: 09/017,937

Filed: February 3, 1998

For: DIRECTIONAL MICROPHONE ASSEMBLY FOR MOUNTING BEHIND A SURFACE

Examiner: Pendleton, Brian T.

Group Art Unit: 2644

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as First Class Mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on February 21, 2006.

By: _____
Reg. No. 34,389

DECLARATION OF INVENTORS UNDER 37 C.F.R. §1.131

1. The undersigned Stephen D. Julstrom is currently self-employed as a consultant. He is a co-inventor of U.S. Patent Application No. 09/017,937 (the "present application").

2. The undersigned Robert B. Schulein is currently self-employed as a consultant. He is a co-inventor of the present application.

3. All statements made herein of our own knowledge are true and all statements made upon information and belief are believed to be true.

4. We have been made aware of U.S. Patent No. 6,122,389 to Steven R. Grosz ("the Grosz patent") which, as indicated on the face of the patent, has a filing date of January 20, 1998.

5. At least as early as prior to January 20, 1998, Inventor Stephen D. Julstrom and Inventor Robert B. Schulein conceived of, made, and successfully tested the directional microphone assembly for mounting behind a surface in an automobile as described and claimed in our U.S. Application Serial No. 09/017,937.

6. Specifically, at least as early as prior to January 20, 1998, we as co-inventors of the present application, conceived of a directional microphone assembly that utilized two microphones. Based on this conception, we detailed such a directional microphone in an electronic schematic diagram. The diagram (date removed) is attached at Exhibit A. The diagram was prepared prior to January 20, 1998.

7. The schematic diagram depicts the electronic circuitry of a directional microphone assembly that utilizes two microphones. The two microphone inputs are represented in the diagram at the left most end of the diagram as the front and rear drain, source, and ground. The schematic diagram sets forth a representation of the signal processing circuitry for processing the signals received from the two microphones.

8. The directional microphone assembly represented by the schematic diagram also includes circuitry designed to limit the adverse effects on the assembly output signal from amplitude and phase mismatches between the two microphones. The circuitry to limit adverse effects is represented in the schematic diagram at least by R1, shown at the left end of the schematic diagram, and C8, C9, C10, R19, and R20 shown just right of the center of the schematic diagram. These components of the circuitry adjust and filter the electrical signals from the two microphones to remove adverse effects from amplitude and phase mismatches between the two microphones.

9. At least as early as prior to January 20, 1998, we as co-inventors of the present application, built and tested the directional microphone assembly as depicted in the schematic diagram (Exhibit A).

10. Additionally, we designed a case for the directional microphone assembly. The case is depicted in the drawing (date removed) attached as Exhibit B. The drawing shows a front cover of the case as the upper most component in the drawing. Immediately below the front cover are two sealing gaskets. Immediately below the sealing gaskets are shown two microphones. Below the microphones is shown the circuit board. The circuit board was understood to possess the circuitry represented by the schematic diagram attached as Exhibit A and described above at paragraphs 6-9. At the bottom of the drawing, the back cover of the case is depicted.

11. At least as early as prior to January 20, 1998, we as co-inventors of the present application, built and tested the directional microphone assembly as depicted in the schematic diagram (Exhibit A) for use in an automobile behind a surface commonly found in an automobile, such as behind a plastic panel or a cloth often used in the ceiling of the automobile cabin. At least as early as prior to January 20, 1998, we as co-inventors of the present application, further prepared a drawing identifying that the case as shown in Exhibit B would be used in automotive applications. Attached Exhibit C shows the case of Exhibit B and identifies the case as a "Dual Omni Directional Microphone Automotive Cellular Communications (Type A)."

12. The testing was performed to simulate a number of scenarios that might be encountered in an automobile, examples of which appear on Exhibit D (date removed), also created prior to January 20, 1998. Specifically, the testing was performed with no barrier, a

barrier appropriated from a Cadillac vehicle, and a barrier appropriated from a Ford vehicle. The tests were conducted to characterize the ability of the directional microphone assembly to maintain uniform polar characteristics under a variety of acoustic mounting conditions, which were recorded in the nine curves of Exhibit E. The dates have been removed from these curves, as well as all of the attached papers in conjunction with filing this Declaration because we have been advised that removal of dates preceding January 20, 1998 is appropriate in accordance with §715.07 (II) of the *Manual of Patent Examining Procedure*.

13. The nine curves of Exhibit E demonstrated to us as inventors that the directional microphone assembly worked as predicted and intended.

14. The present inventors thus conceived of and developed the directional microphone assembly as claimed in the present application prior to January 20, 1998.

We, the undersigned, further acknowledge that willful false statements and the like made in this declaration are punishable by fine or imprisonment, or both, under 18 U.S.C.§1001 and may jeopardize the validity of the present application or any patent issuing thereon.

Stephen D. Julstrom — Date: Feb. 16 2006

Robert B. Schulein — Date: Feb 16, 2006

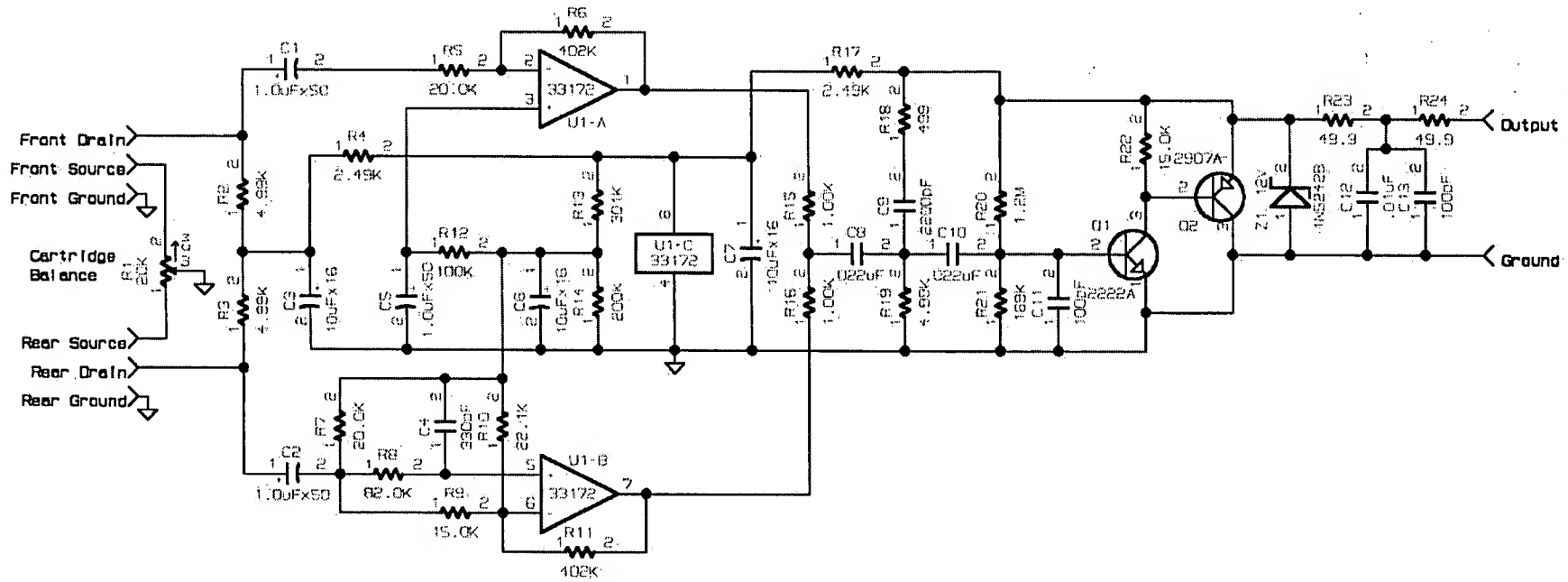


EXHIBIT A

Etymotic Research	
File: c:\ezrwin\ezlogic\drawings\dvcmcar1.sch	
Title:	
Sheet: Dual Omni Mic Preamp	No: 1 Rev: 1.0
Drawn: Stephen Julstrom	
Engineer: Stephen Julstrom	Created:
Approved:	Changed:

DESCRIPTION	MATERIAL:	FINISH:	DRWG. NO.
MICROPHONE ASSEMBLY (TYPE A)			

SHEET NO. | OF | SHEETS

ISS. RECORD OF CHANGES MADE

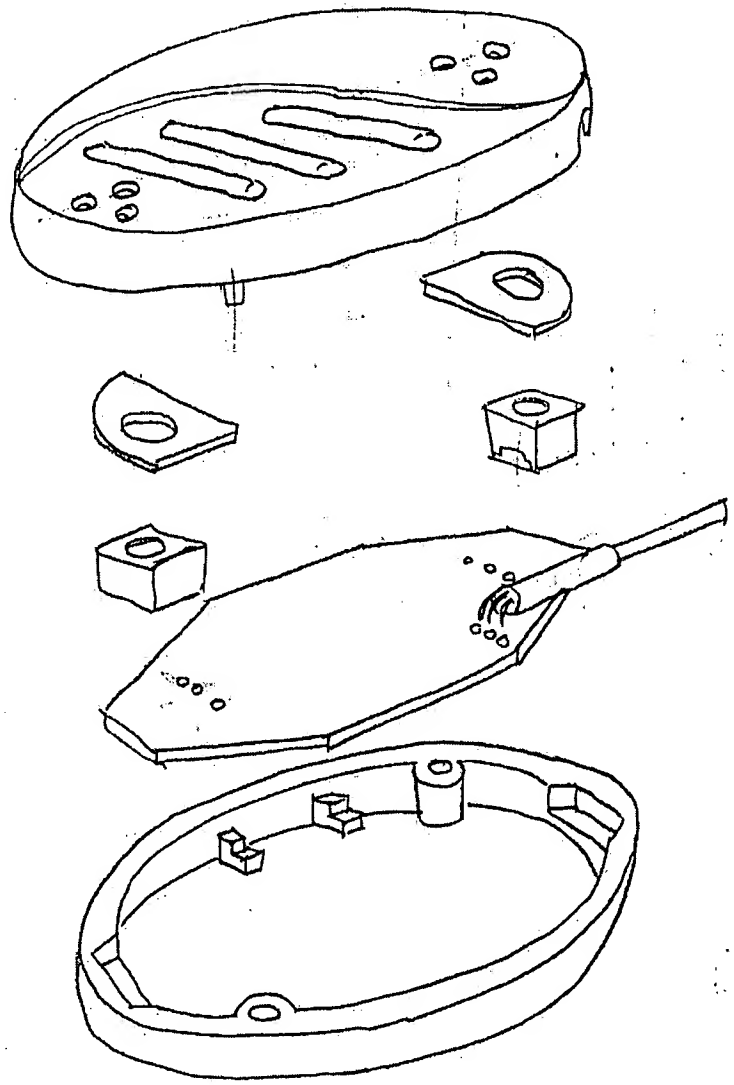


EXHIBIT B

Etymotic Research, Inc.
PROPRIETARY INFORMATION

CONFIDENTIAL

ORIG. USED IN

NOTES: - DO NOT SCALE DRAWINGS.
- DIMENSIONS SHOWN APPLY BEFORE PLATING.
- ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED.

ETYMOTIC RESEARCH
61 Martin Lane
Elk Grove Village, Illinois 60007
(847) 228-0006

SCALE: 1	PROJ.	DRAWN VIOREL D.
		APPROVED
		APPROVED
		APPROVED

Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.*

DESCRIPTION: DUAL OMNI DIRECTIONAL MICROPHONE AUTOMOTIVE CELLULAR COMMUNICATIONS (TYPE A)

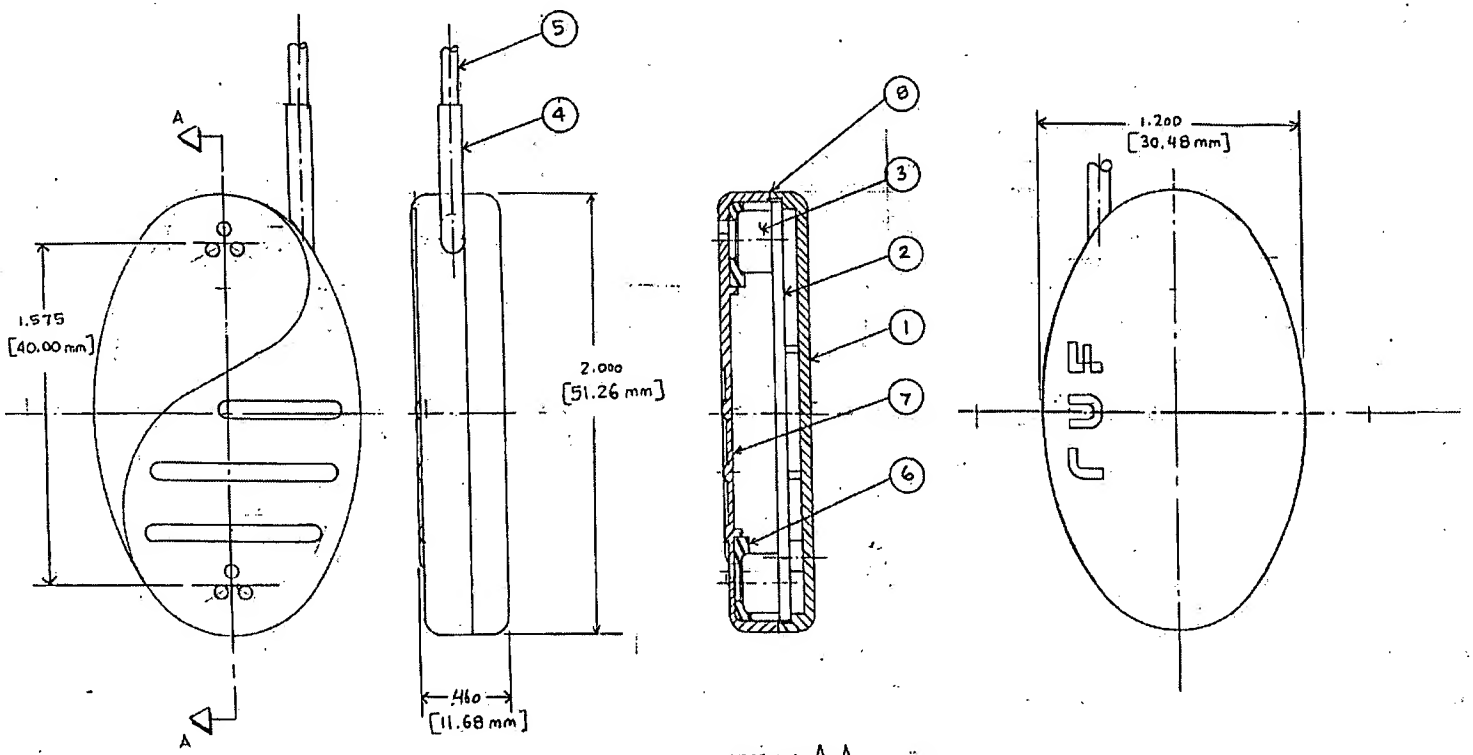
MATERIAL:

FINISH:

DRWG. NO.

SHEET NO. 1 OF 1 SHEETS

REV. — RECORD OF CHANGES MADE



SECTION A-A

NOTE:

ALL DIMENSIONS FOR REFERENCE ONLY.

ITEM	PART NUMBER	DESCRIPTION	QTY
8		ADHESIVE	—
7		COVER, MICROPHONE	1
6		COMPRESSION PAD	2
5		CABLE	1
4		SHRINK TUBING	1
3		MICROPHONE	2
2		P.C. BOARD	1
1		BASE MICROPHONE	1

NOTES:
- DO NOT SCALE DRAWINGS.
- DIMENSIONS SHOWN APPLY BEFORE PLATING.
- ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED.

ETYMOTIC RESEARCH
61 Martin Lane
Elk Grove Village, Illinois 60007
(847) 228-0006

SCALE: 2:1

PROJ.

DRAWN VIOREL D.

APPROVED

APPROVED

APPROVED

ORIG. USED IN

Etymotic (ah-tim-OH-tik) is a "new ancient Greek word" which means *true to the ear*

EXHIBIT C

DESCRIPTION: AUTOMOTIVE DIRECTIONAL MICROPHONE LOCATION LAYOUT PROPOSAL

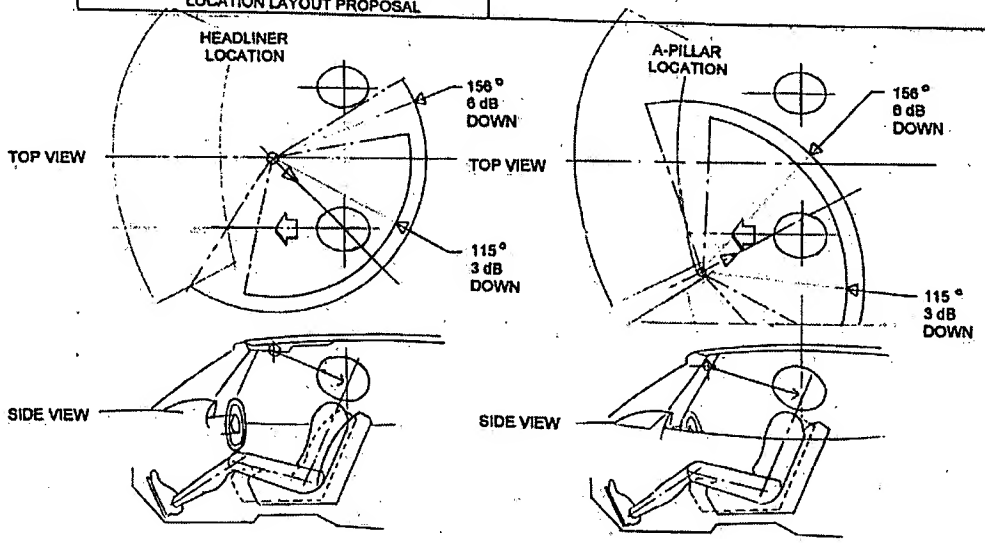
MATERIAL:

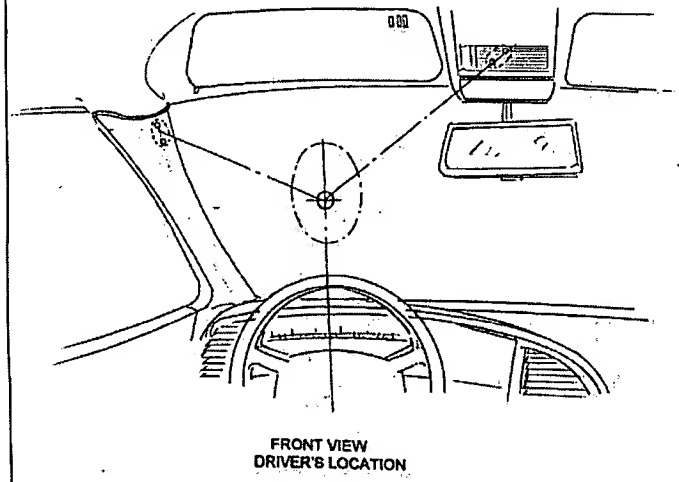
FINISH:

DRWG. NO. AMLP1

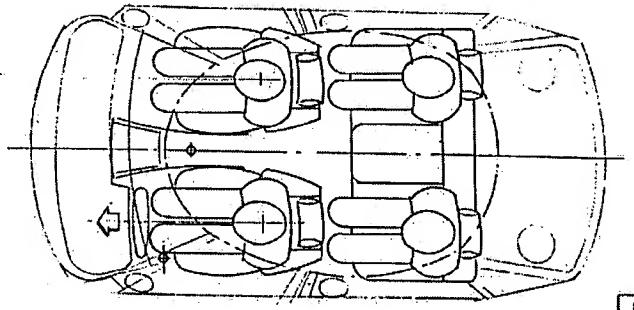
SHEET NO. OF SHEETS

ISS. RECORD OF CHANGES MADE





FRONT VIEW
DRIVER'S LOCATION



TOP VIEW

EXHIBIT D

Etymotic Research, Inc.
PROPRIETARY INFORMATION

CONFIDENTIAL

ORIG. USED IN

NOTES: - DO NOT SCALE DRAWINGS.
- DIMENSIONS SHOWN APPLY BEFORE PLATING.
- ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED.

ETYMOTIC RESEARCH
61 Martin Lane
Elk Grove Village, Illinois 60007
(847) 228-0006

SCALE: — PROJ.

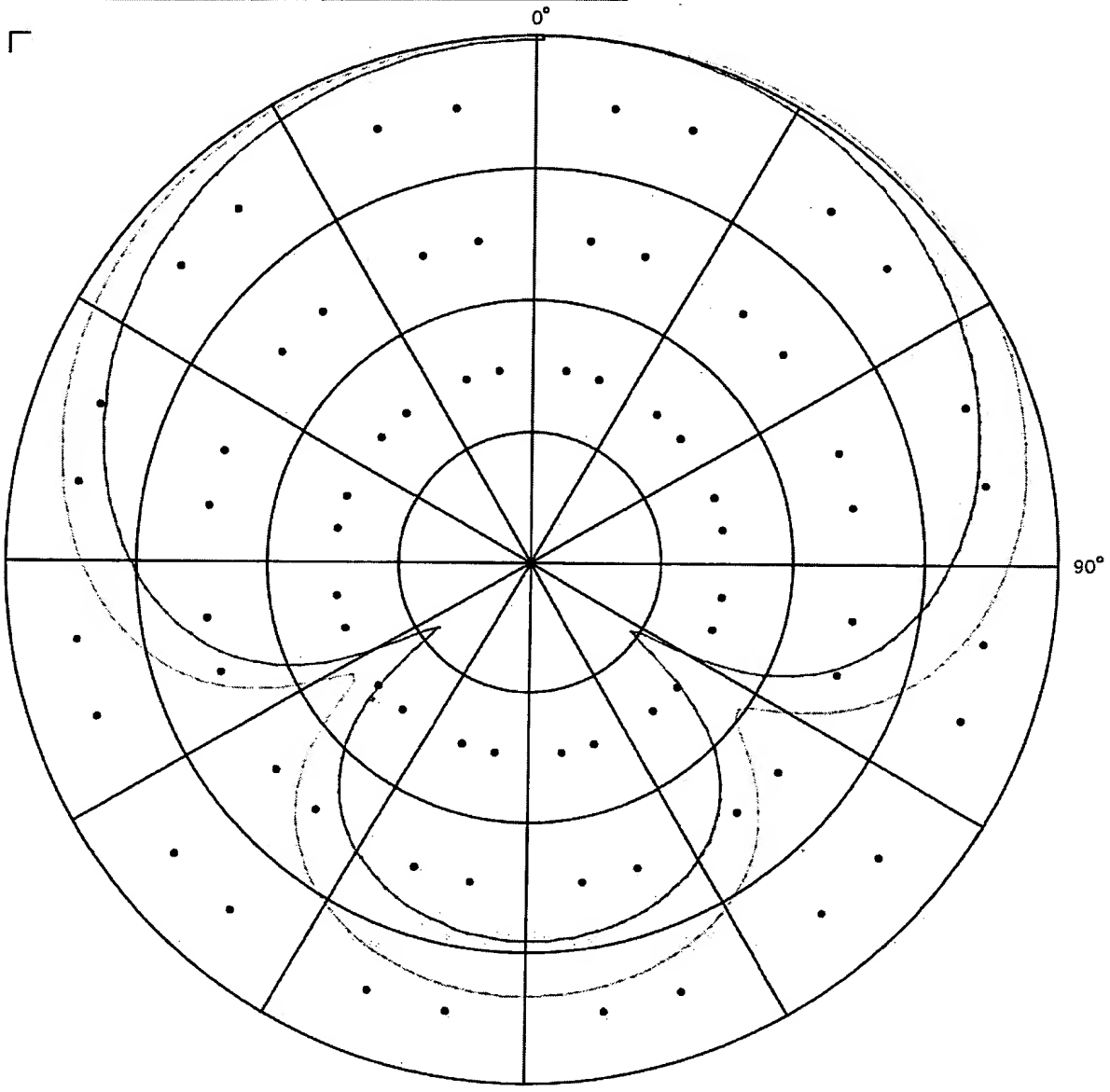
DRAWN VIOREL D.

APPROVED RBS

APPROVED

APPROVED

ETYMŌTIC RESEARCH



CURVE #11 POLAR CHARACTERISTICS (10 dB/Major Division)

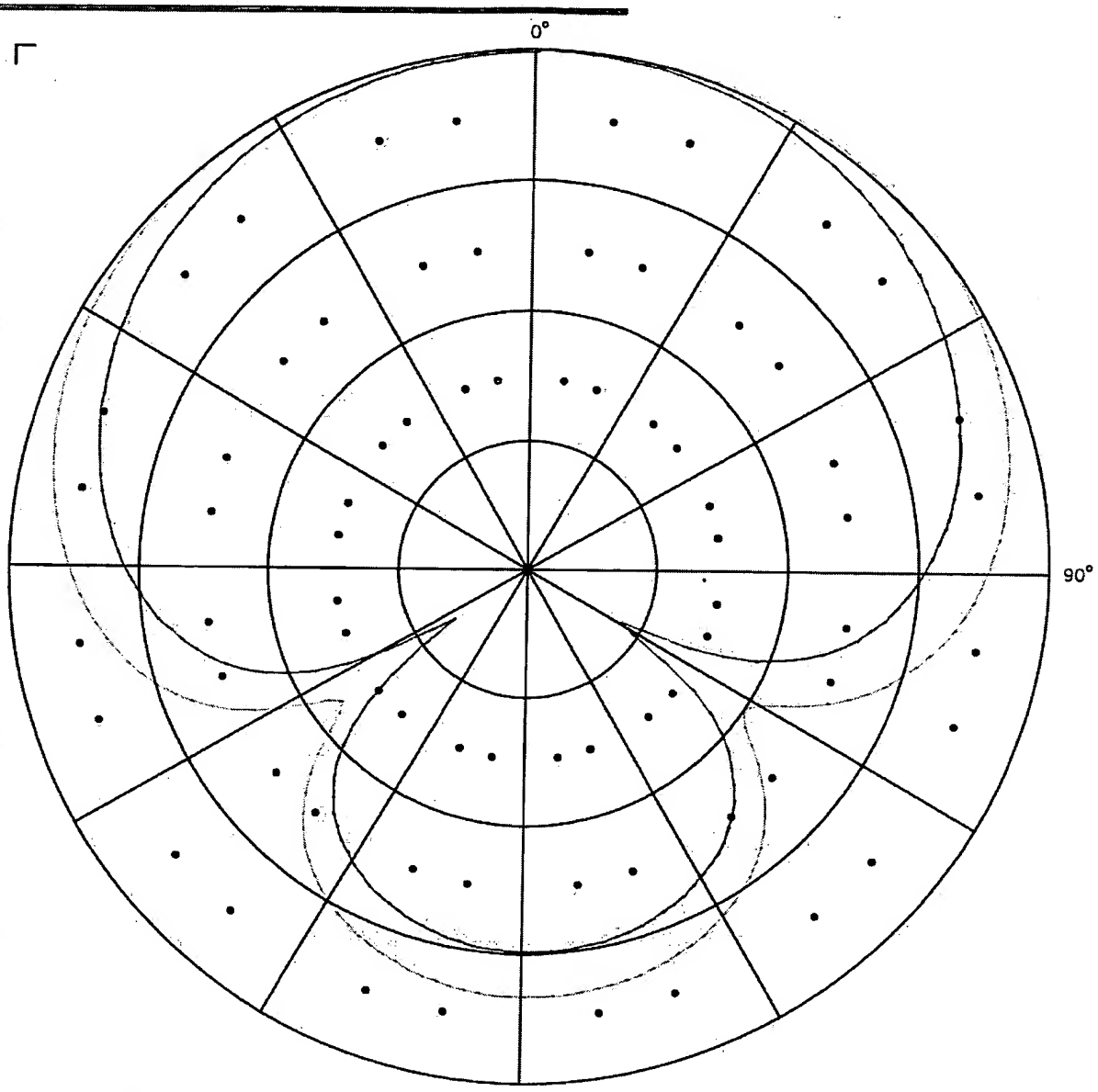
MICROPHONE: RUF3 No Surface
FREQUENCY: 500, 3000 Hz.
SENSITIVITY: (dB re 1V/uBAR) -43.6, -38.3 dB
S/N RATIO: 51, 37 dB
DIRECTIVITY INDEX: 5.8, 3.6 dB

EXHIBIT E

INPUT: 90 dB SPL
DATE:
TIME:
INITIALS: SDJ
DIRECTION: CCW

ETYMŌTIC RESEARCH, 61 Martin Lane, Elk Grove Village, Illinois 60007 (847) 228-0006
Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.* Fax (847) 228-6836

ETYMŌTIC RESEARCH



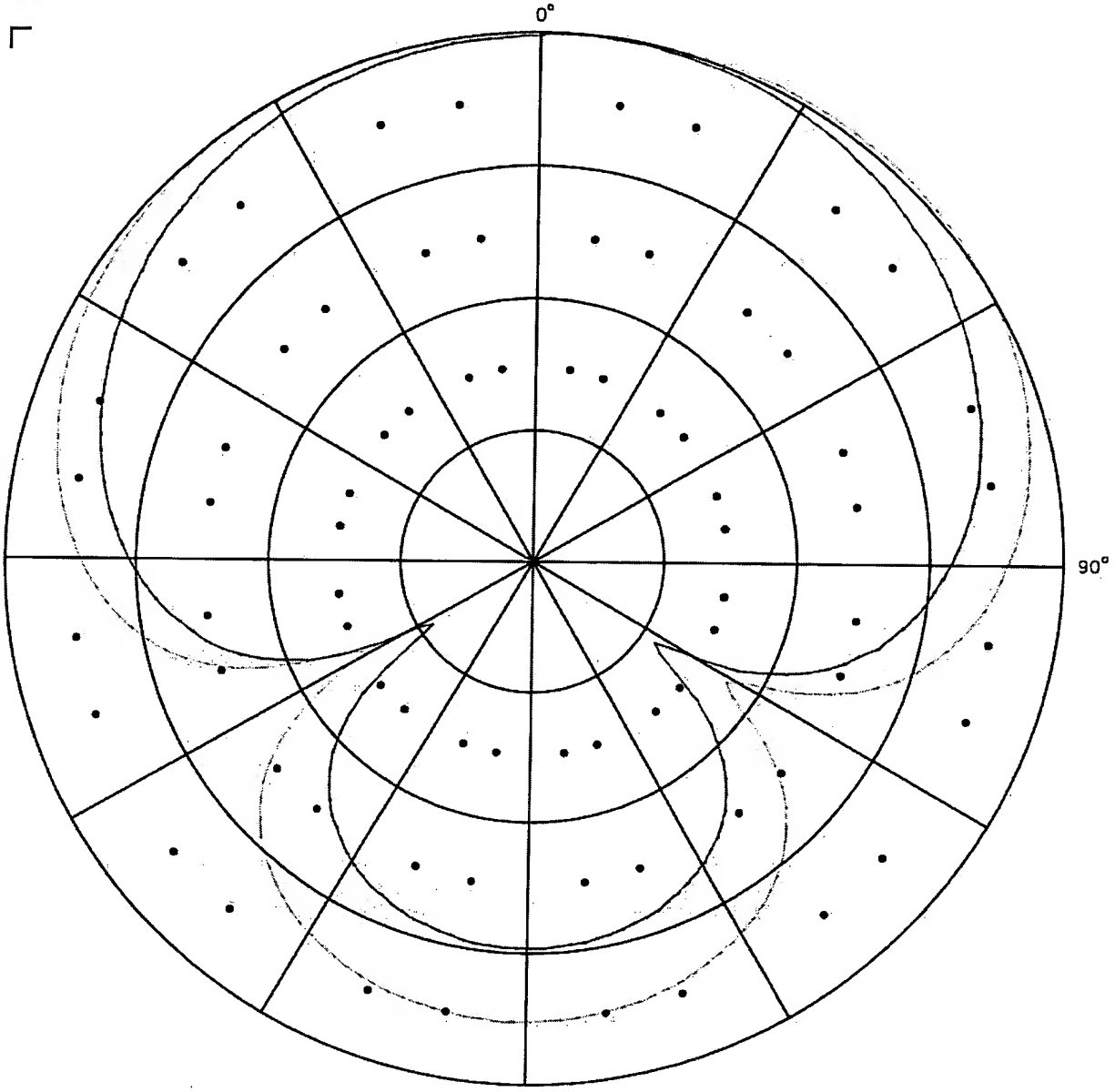
CURVE #12 POLAR CHARACTERISTICS (10 dB/Major Division)

MICROPHONE: RUF3 1/16" surface; 1/5" hole
FREQUENCY: 500, 3000 Hz.
SENSITIVITY: (dB re 1V/uBAR) −43.4, −38.1 dB
S/N RATIO: 51, 37 dB
DIRECTIVITY INDEX: 5.9, 3.5 dB

INPUT: 90 dB SPL
DATE:
TIME:
INITIALS: SDJ
DIRECTION: CCW

ETYMŌTIC RESEARCH, 61 Martin Lane, Elk Grove Village, Illinois 60007 (847) 228-0006
Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.* Fax (847) 228-6836

ETYMŌTIC RESEARCH



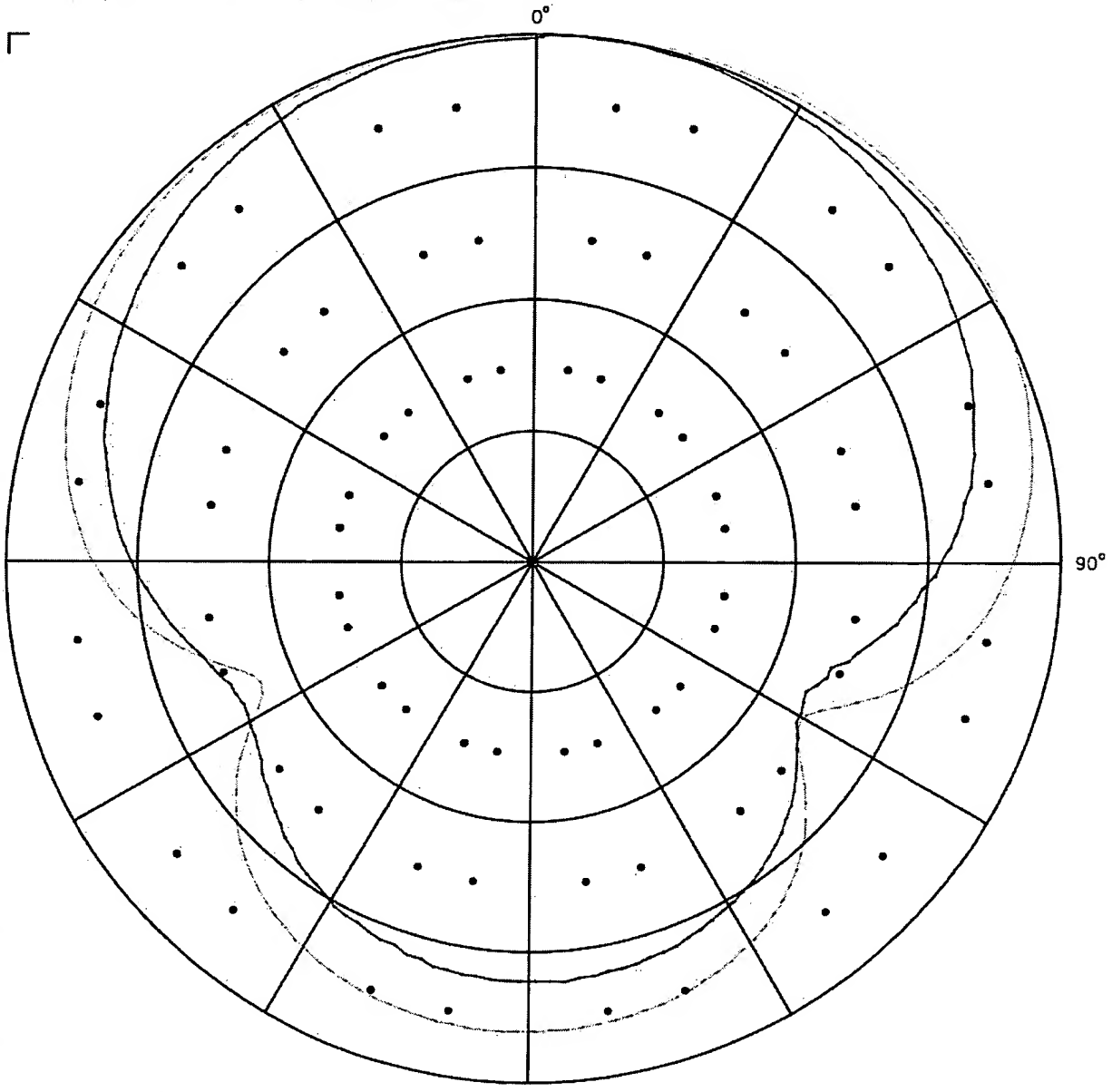
CURVE #13 POLAR CHARACTERISTICS (10 dB/Major Division)

MICROPHONE: RUF3 1/4" surface, 1/5" hole
FREQUENCY: 500, 3000 Hz.
SENSITIVITY: (dB re 1V/uBAR) −43.0, −37.5 dB
S/N RATIO: 51, 36 dB
DIRECTIVITY INDEX: 5.8, 3.4 dB

INPUT: 90 dB SPL
DATE:
TIME:
INITIALS: SDJ
DIRECTION: CCW

ETYMŌTIC RESEARCH, 61 Martin Lane, Elk Grove Village, Illinois 60007 (847) 228-0006
Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.* Fax (847) 228-6836

ETYMŌTIC RESEARCH



CURVE #14 POLAR CHARACTERISTICS (10 dB/Major Division)

RUF3 1/4" surface, 1/5" hole, Ford

MICROPHONE: material

FREQUENCY: 500, 3000 Hz.

SENSITIVITY: (dB re 1V/uBAR) -45.1, -38.5 dB

S/N RATIO: 43, 30 dB

DIRECTIVITY INDEX: 5.7, 3.3 dB

INPUT: 90 dB SPL

DATE:

TIME:

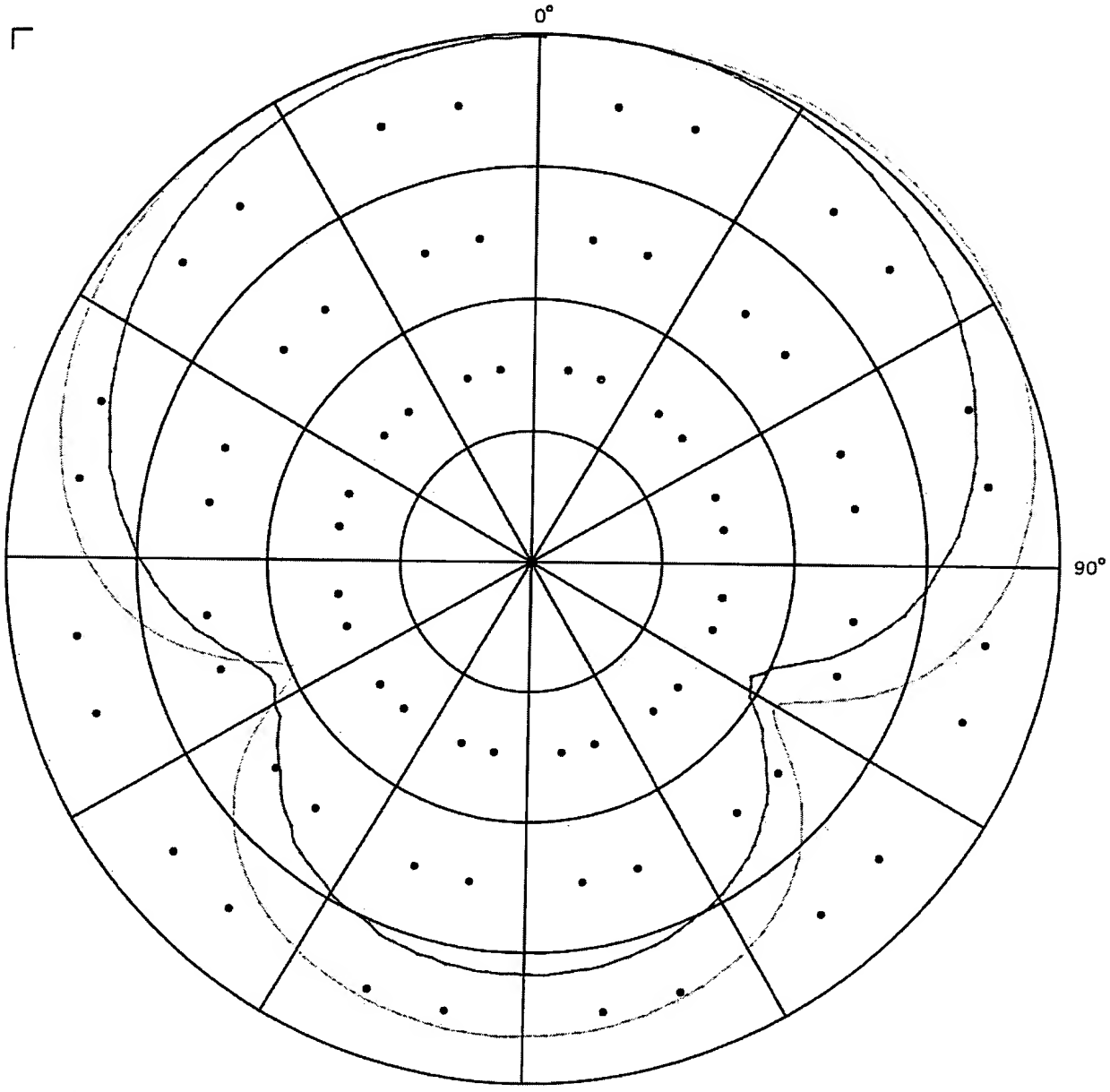
INITIALS: SDJ

DIRECTION: CCW

ETYMŌTIC RESEARCH, 61 Martin Lane, Elk Grove Village, Illinois 60007 (847) 228-0006

Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.* Fax (847) 228-6836

ETYMŌTIC RESEARCH



CURVE #15 POLAR CHARACTERISTICS (10 dB/Major Division)

MICROPHONE: RUF3 1/4" surface, 1/5" hole, Cadillac material w/foam, no glue

FREQUENCY: 500, 3000 Hz.

SENSITIVITY (dB re 1V/uBAR): -44.8, -38.1 dB

S/N RATIO: 45, 36 dB

DIRECTIVITY INDEX: 5.8, 3.1 dB

INPUT: 90 dB SPL

DATE:

TIME:

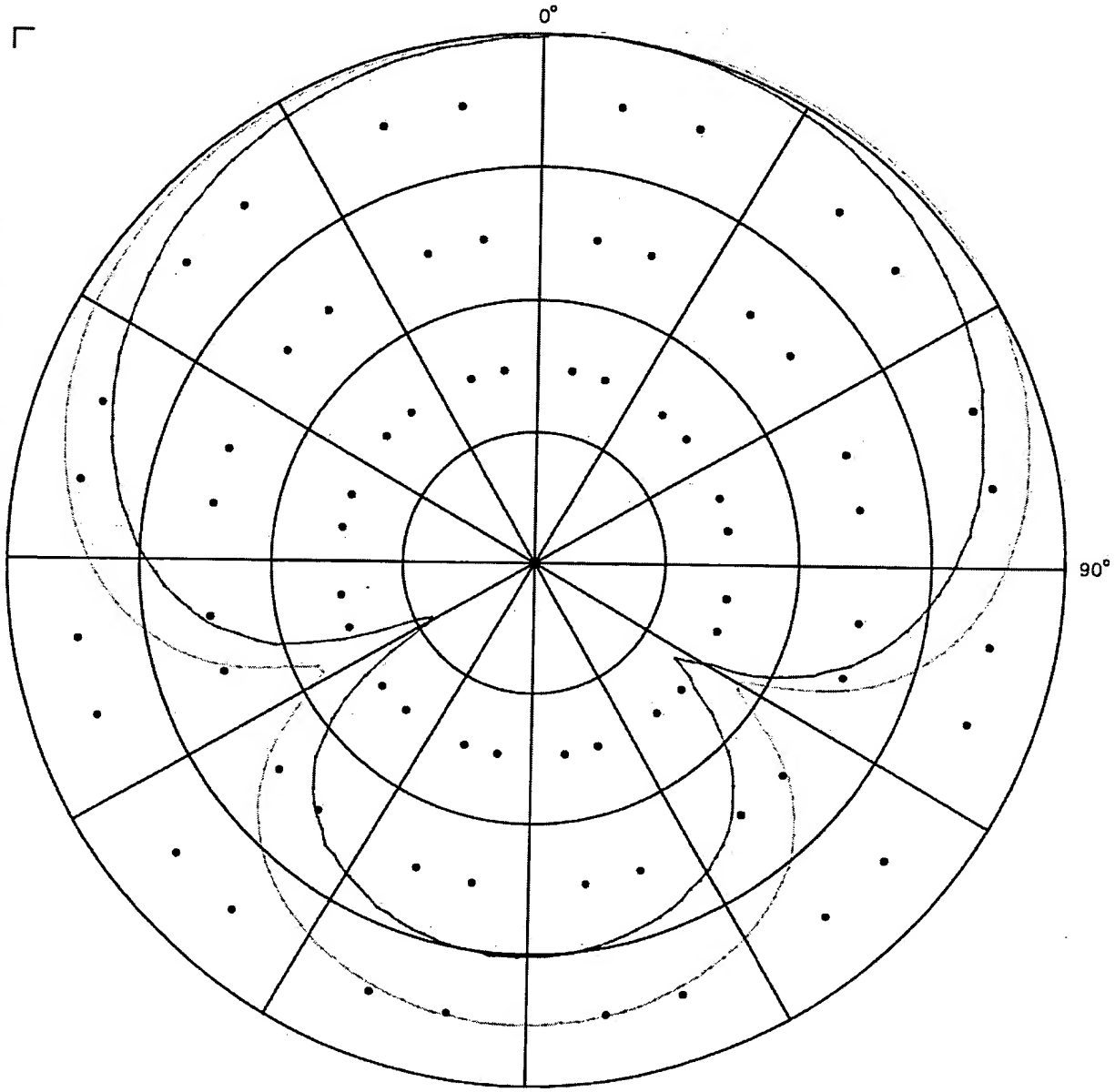
INITIALS: SDJ

DIRECTION: CCW

ETYMŌTIC RESEARCH, 61 Martin Lane, Elk Grove Village, Illinois 60007 (847) 228-0006

Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.* Fax (847) 228-6836

ETYMŌTIC RESEARCH



CURVE #16 POLAR CHARACTERISTICS (10 dB/Major Division)

MICROPHONE: RUF3 1/8" surface, 1/5" hole, Cadil lac material w/foam, no glue

FREQUENCY: 500, 3000 Hz.

SENSITIVITY (dB re 1V/uBAR): -43.6, -37.8 dB

S/N RATIO: 46, 35 dB

DIRECTIVITY INDEX: 5.9, 3.5 dB

INPUT: 90 dB SPL

DATE:

TIME:

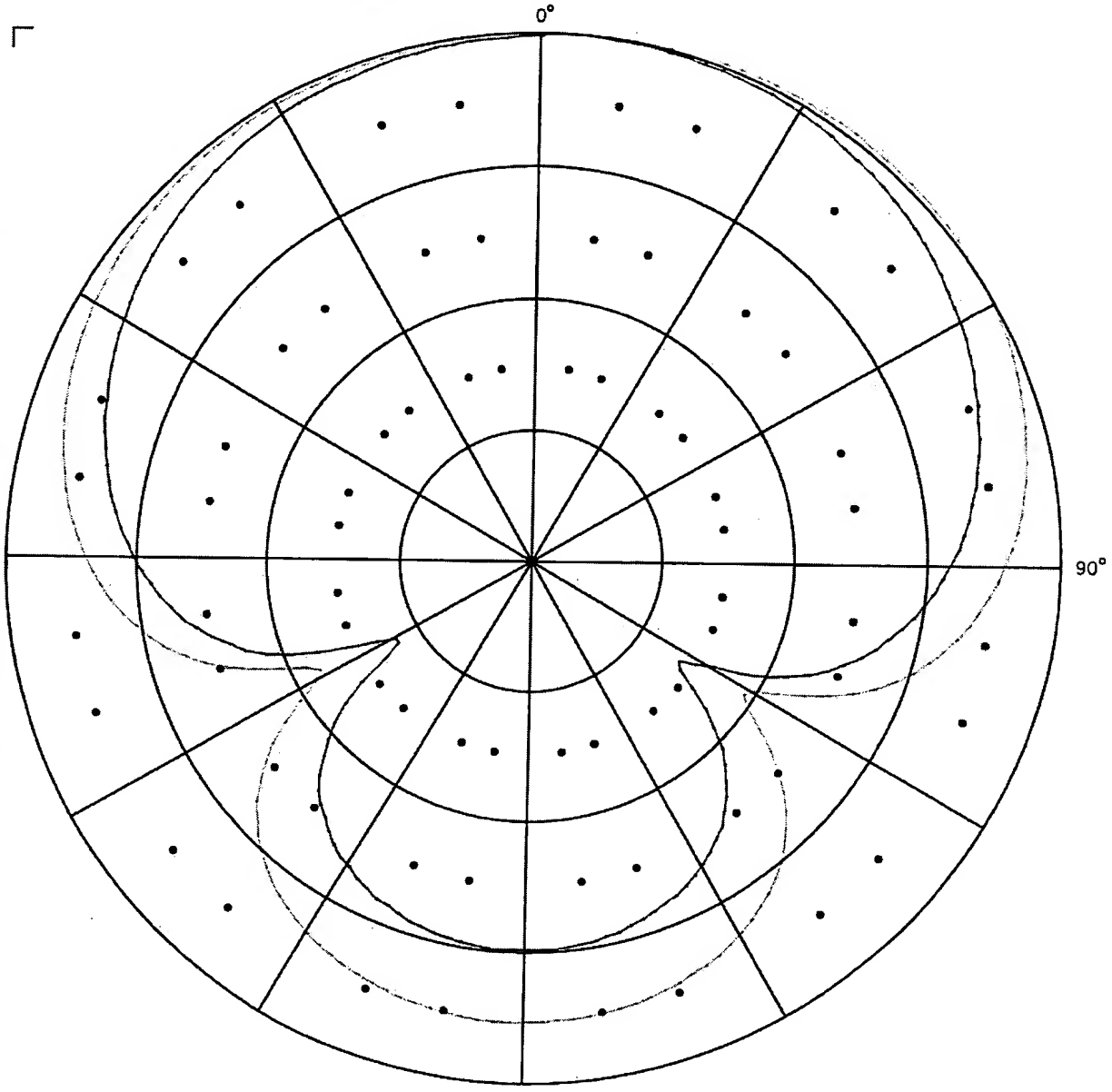
INITIALS: SDJ

DIRECTION: CCW

ETYMŌTIC RESEARCH, 61 Martin Lane, Elk Grove Village, Illinois 60007 (847) 228-0006

Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.* Fax (847) 228-6836

ETYMŌTIC RESEARCH



CURVE #17 POLAR CHARACTERISTICS (10 dB/Major Division)

MICROPHONE: RUF3 1/8" surface, 1/5" hole, ~~Cadil~~ Ford ~~Iac~~ material ~~no-foam~~

FREQUENCY: 500, 3000 Hz.

SENSITIVITY (dB re 1V/uBAR): -43.8, -38.2 dB

S/N RATIO: 50, 37 dB

DIRECTIVITY INDEX: 5.8, 3.5 dB

INPUT: 90 dB SPL

DATE:

TIME:

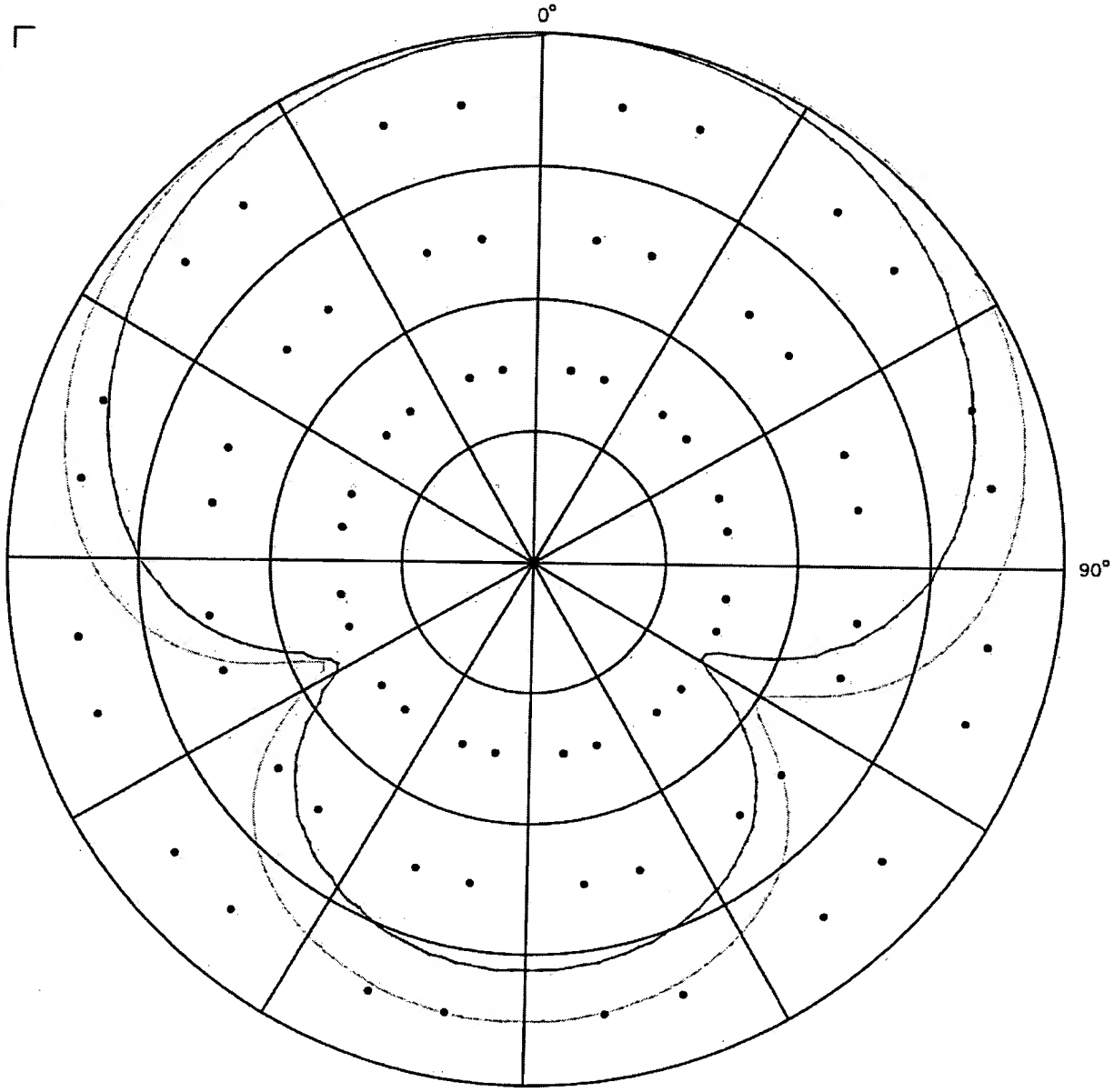
INITIALS: SDJ

DIRECTION: CCW

ETYMŌTIC RESEARCH, 61 Martin Lane, Elk Grove Village, Illinois 60007 (847) 228-0006

Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.* Fax (847) 228-6836

ETYMŌTIC RESEARCH



CURVE #18 POLAR CHARACTERISTICS (10 dB/Major Division)

MICROPHONE: RUF3 1/8" surface, 1/5" hole, Cadil lac material no foam

FREQUENCY: 500, 3000 Hz.

SENSITIVITY (dB re 1V/uBAR): -44.3, -38.1 dB

S/N RATIO: 48, 37 dB

DIRECTIVITY INDEX: 6.0, 3.6 dB

INPUT: 90 dB SPL

DATE:

TIME:

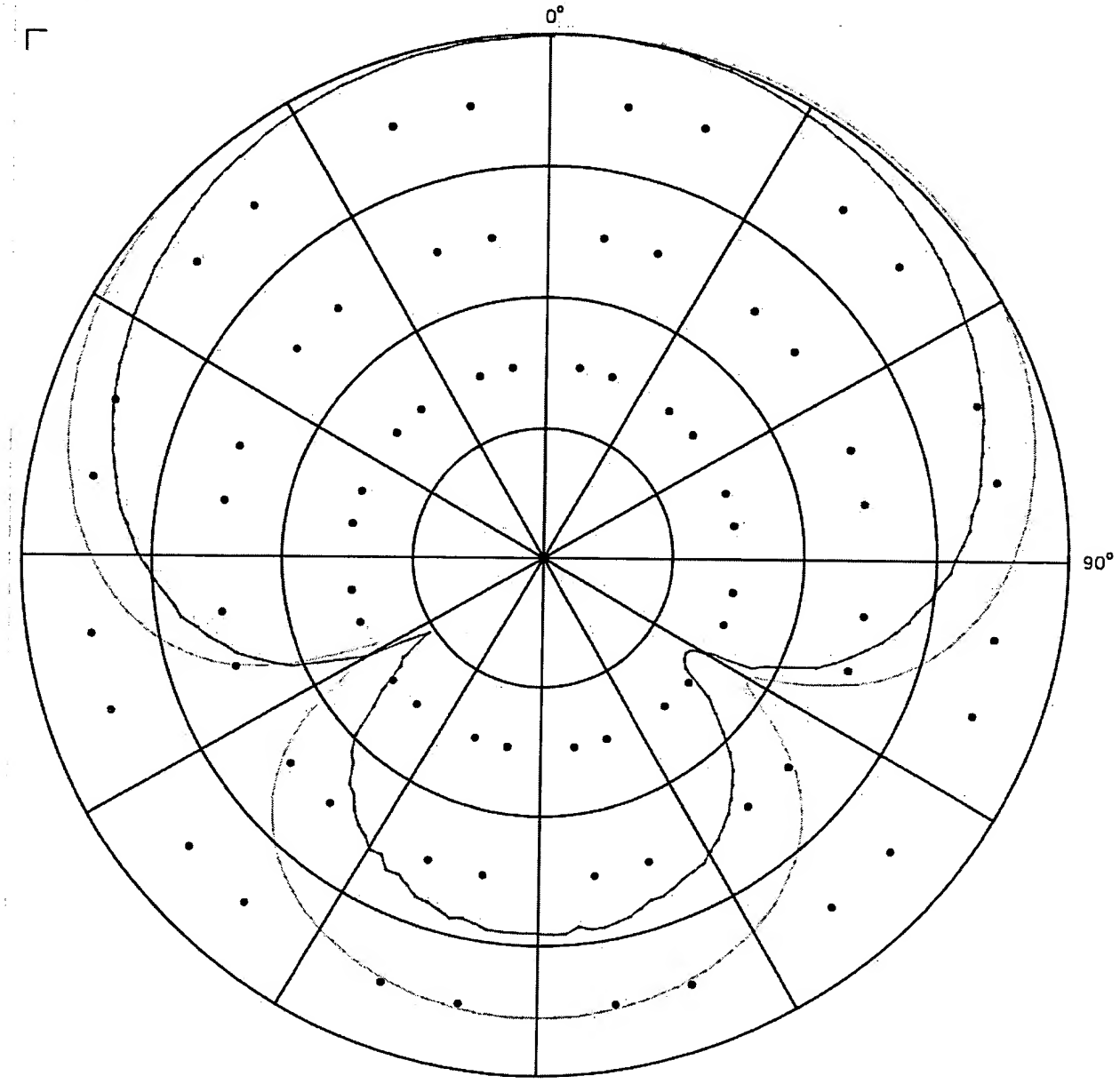
INITIALS: SDJ

DIRECTION: CCW

ETYMŌTIC RESEARCH, 61 Martin Lane, Elk Grove Village, Illinois 60007 (847) 228-0006

Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.* Fax (847) 228-6836

ETYMŌTIC RESEARCH



CURVE #19 POLAR CHARACTERISTICS (10 dB/Major Division)

RUF3 1/4" surface, 1/5" hole, Cadil
MICROPHONE: lac material, no foam

FREQUENCY: 500, 3000 Hz.

SENSITIVITY: −43.3, −37.9 dB
(dB re 1V/uBAR)

S/N RATIO: 45, 34 dB

DIRECTIVITY INDEX: 5.8, 3.3 dB

INPUT: 90 dB SPL

DATE:

TIME:

INITIALS: SDJ

DIRECTION: CCW

ETYMŌTIC RESEARCH, 61 Martin Lane, Elk Grove Village, Illinois 60007 (847) 228-0006

Etymotic (et-im-OH-tik) is a "new ancient Greek word" which means *true to the ear.* Fax (847) 228-6836